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Spectrum of cancers among South Asians working in Brunei Darussalam

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Abstract

Background: Worldwide the incidence of cancers is increasing and this seen more in developing nations. This study looks at the spectrum of cancers among South Asian nationals working in Brunei Darussalam, a developing Southeast Asia nation. **Materials and Methods:** The cancer registry from 1994 to 2012 maintained by the State Laboratory was retrospectively reviewed. **Results:** Over the period, there was a total of 123 cancer cases diagnosed among South Asians, giving an incidence of 1.5% (n = 123/8253). The mean age at diagnosis was 42.9 ± 17.1 with a gender ratio of (male 60; female 63). Among the South Asians, Indians accounted for the most (53.7%) cases, followed by Nepalese (39.8%), Pakistani (3.3%) and Sri Lankan (2.4%). The most common cancers were cancers of the female reproductive/gynecologic organs, gastrointestinal tract, and breast. Among the two major ethnic groups; cancers of the breast was the most common among Indians followed by gastrointestinal tract where among the Nepalese, these were gastrointestinal tract followed by gynecologic (esp. cervical cancers). Among the South Asian, the Nepalese were younger at diagnosis compared to the other groups. **Conclusion:** The spectrum of cancers among South Asian residing in Brunei is comparable to what have been reported from South Asia with the exception of lung cancers. The most common cancers were cancers of female reproductive/gynecologic organs, gastrointestinal tract and breast. South Asians were younger at diagnosis of cancers compared to non-South Asians.

Key words: Cancers, Indian subcontinent, neoplasms, South Asian, spectrum

Introduction

Cancer remains an important cause of morbidity and mortality in the developed nations and is becoming an important issue in many developing nations. In 2012, there were an estimated 14.1 million new cancer cases and 8.2 million cancer-related deaths worldwide.[1] Of importance was that 57% (8 million) of new cancer cases, 65% (5.3 million) of the cancer deaths and 48% (15.6 million) of the 5-year prevalent cancer cases occurred in the less developed regions.[1] Cancer incidence remains low in many developing and underdeveloped nations but is increasing as the population age and in life-style changes due to globalization.[1] South Asia is one of the most populous regions in the world, and cancer is now becoming an important public health issue. The types of cancers vary but generally tobacco-related cancers predominate, especially in men and to some extent in women, while in women, breast and cervix cancers predominate.[2] Data on South Asians outside of the South Asia region have mainly come from the West.[3-6] This study assessed the spectrum of cancers among the nonimmigrant South Asians working in Brunei Darussalam, a developing Southeast Asia nation.

Materials and Methods

Setting

Brunei Darussalam is a small developing nation with a total area of 5765 km^2 and estimated the population of 415,717 (July 2013; Department of Economic Planning, Ministry of Finance) located on the island of Borneo. The population breakdown consists of ethnic group (Malays 66.3%, ethnic Chinese 11% and indigenous 2.7%) and the expatriate group (20%). The expatriate group consisted of Southeast Asian, Caucasians and South Asian. The 2010 population census (Department of Economic Planning, Ministry of Finance) reported that there were just over 16,000 South Asian working in the country; Indians 9042, Bangladeshi 4347, Nepalese 2505, Pakistani 209, Sri Lankan 98 and others (not specified n = 2).

Data source

The cancer registry (1994–2012) maintained by the Department of Pathology was retrospectively reviewed. Only histology proven cancers are registered. Being the only state histopathology laboratory, the registry is for the whole country and therefore is representative.

Cancers categorization

For this study, the cancers were categorized into system; Neurological, Head and Neck (cancers located in the head and neck region; including the upper aerodigestive tract), gastrointestinal tract (esophagus to anus), thorax (lung, mediastinal, airways and the pleura), male reproductive, female reproductive/gynecologic, urological, skin and appendages which include soft tissue, and the others (all other cancers).

Statistic

The data were entered into Word excel (Microsoft) and later transferred into the Statistical Package for Social Sciences (SPSS Inc., version 16.0, Chicago, IL USA) program for analysis. Chi-square test was used to compare the categorical variables and the Mann–Whitney nonparametric test were used to compare the continuous variables. $P < 0.05$ was considered as significant.

Results

Over the study period, there were a total of 8253 cancer cases diagnosed; of which 123 were South Asia ethnicities, giving an incidence of 1.5%. The mean age at diagnosis was 42.9 ± 17.1 years old, significantly younger than the non-South Asian group (54.3 ± 17.7 years old, $P < 0.001$). The gender ratio (male 48.8%; female 51.2%) was not significantly different to the non-South Asian group (male 44.0%, female 56.0%, $P = 0.285$).

The commonly affected groups were the Indian and the Nepalese. Indians accounted for the most (53.7%) cases, followed by Nepalese (39.8%), Pakistani (3.3%) and Sri Lankan (2.4%). Among the various groups, Pakistani was the youngest (29.3 ± 19.2) compared to Indians (47.5 ± 18.3), Nepalese (36.8 ± 12.2), Sri Lankan (62.3 ± 16.7) and the Bangladeshi (34 years old).

The most common cancers were cancer of the reproductive/gynecologic system, followed by gastrointestinal tract and breast. Among women, the most common cancers were cancers of the breast and cervix. Among men, the most common cancers were cancer of the gastrointestinal tract, in particular the colon and stomach. Mouth and content cancers accounted 57.1% (n = 4/7) of Indians and all of Nepalese (100%, n = 3) with head and neck cancers. The remainder of the Indians (n = 3) with head and neck cancers were cancers of the salivary glands. There was only one case of lung cancer. This is shown in Table 1.

Discussion

Our study showed that nonimmigrant South Asians accounted for 1.5% of all cancers, higher proportion among the Indians and

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Nepalese. Compared with the rates reported in the literature, our rates were slightly different from those reported from South Asia or on immigrant South Asian in the United States, Europe and Southeast Asia.[1-6] Rates based on the IARC data for South Asia in 2012 were CR 80.8/100,000 and ASR 96.5/100,000 (excluding nonmelanoma skin cancers). One study on South Asian outside reported rates of 172.9/100,000 in the United Kingdom (1999–2001), between 151.6/100,000 and 175.8/100,000 across the United States (1999–2001), and 101.5/100,000 in Singapore (1993–1997).[6] Study from Singapore based on the Cancer Registry (2008–2012)[7] reported higher rates than the earlier study (CR 139.5/100,000 and ASR 141.2/100,000 for Indian male and CR 171.9/100,000 and ASR 162.1/100,000 for Indian female) indicating continued increase in cancer incidence following the trends reported in developed countries. In our study, the CR was highest among Nepalese (102.9/100,000), followed by Sri Lankans (161.1/100,000) and Pakistani (100.7/100,000) and lowest rates among Indians (38.4/100,000) and Bangladeshi (23.0/100,000). With the exception of the rate for Bangladeshi (IARC rates CR 80.5/100,000 and ASR 104.4/100,000)[1], our rates are comparable to the rates from South Asia, but lower than rates reported from the other parts of the world.[3-7] This is expected given that the South Asians in our study were nonimmigrant workers and generally represented those who were fit to work overseas and had undergone medical fitness prior to starting employment.

In our study, the most common cancers were female reproductive/gynecologic system specifically cancer of the uterine cervix, followed by gastrointestinal tract, breast and the head and neck regions. In India, cancers of the uterine cervix and breast were the two most common cancers among women, and in men were oral and throat, lung and stomach.[1,2] Similar patterns have been reported in Pakistan, Nepal and Bangladesh[1,2,8-10] with slight differences in order or rates. In Nepal, lung cancer was more common than oral and throat cancer.[1,9] Pakistan has the high rate of breast cancer recorded for a developing nation.[1,2,8] In our study, there was only one documented case of lung cancer and seven cases of mouth and content cancers. Including the other cancers that are associated with smoking, the rate of smoke related cancer was only 8.1%. This is in contrast to the rates reported from South Asia with >40% of cancers to be related to tobacco use either chewed or smoked.[2,8] In general, South Asian immigrants residing in other countries, usually for a long period of time have cancer patterns resembling the countries of residence; higher incidence of prostate and gastrointestinal cancers, uncommon in South Asia and lower incidence of oral cancers.

The mean age of diagnosis in our South Asian group was much younger than the non-South Asian group, a difference of >10 years. This is not unexpected given that South Asians in our study are working away from home, and they tend to be younger. Interestingly, there were also age differences between the various South Asian groups, much younger among the Nepalese compared with the others. However, the numbers for some groups were too small to draw any conclusion.

The characteristics of our South Asian populations may account for some of the differences reported. The Nepalese consisted mainly of personals of the Ghurkha Army Reserve and their dependents (wives and children) stationed in the country. Healthcare provisions for the Nepalese and those under the employment of the government are free. Apart from the Nepalese, the other South Asians were mostly blue collar workers or laborers who often elect to return to their homelands for investigations and treatment for major illnesses, due to cost issues. Another major difference is that smoking is less prevalent among our South Asians. Although there is no published data available, most of the patients of South Asian nationalities we have encountered do not smoke or smoked less. Alcohol intake is also much less, especially with restriction and also the fact that alcohol sale is banned.

The main limitation of our study was the small sample size, especially for some group. However, this reflected the small populations among these groups working in the country. The study only captured histology proven cancer cases, possibly missing some cases. We were only able to calculate the CR rate as reliable age breakdowns were not available. The ASR is typically slightly higher than the CR. Despite this, our rates are comparable to the rates reported in South Asia.

Conclusion

This study reports on the spectrum of cancers among nonimmigrant South Asians working in Brunei Darussalam. There were slightly differences in the predominant cancer types, but generally the rates are comparable to the rates reported from South Asia. This is not unexpected as our South Asian still carries the same risks from their respective homelands. Not unexpectedly, South Asian was significantly younger at diagnosis compared to the non-South Asian group. Among the South Asians, the Nepalese were younger at diagnosis compared to the other group.

Table 1: Types of cancer among the South Asians in Brunei Darussalam

Ethnicity	*n* (male/female)					Overall
	Indian	Nepalese	Pakistani	Bangladeshi	Sri Lankan	
System						
Neurological	3 (3/0)	3 (2/1)	0	0	1 (1/0)	7 (6/1)
Gastrointestinal	12 (8/4)	9 (8/1)	0	1 (1/0)	0	22 (17/5)
Thorax	1 (1/0)	0	0	0	0	1 (1/0)
Breast	16 (0/16)	0	1 (0/1)	0	1 (0/1)	18 (0/18)
Male reproductive	1 (1/0)	1 (1/0)	0	0	0	2 (2/0)
Female reproductive/gynecologic	9 (0/9)	14 (0/14)	0	0	0	23 (0/23)
Hematologic/lymphatic	8 (5/3)	1 (1/0)	0	0	0	9 (6/3)
Head and neck	7 (4/3)	8 (5/3)	1 (0/1)	0	0	16 (9/7)
Skin and appendages/subcutaneous	5 (5/0)	2 (2/0)	1 (0/1)	0	1 (0/1)	9 (7/2)
Urology	3 (2/1)	3 (3/0)	1 (0/1)	0	0	7 (5/2)
Others	1 (0/1)	8 (6/2)	0	0	0	9 (6/3)
Total	66 (29/37)	49 (28/21)	4 (0/4)	1 (1/0)	3 (1/2)	123 (60/63)
Overall Crude rates (per 100,000)	38.4	102.9	100.7	23.0	161.1	40.46

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